

Application No. 10/700,136  
Response to Office Action

Customer No. 01933

Listing of Claims:

1. (Currently Amended) A semiconductor device comprising:  
a semiconductor substrate having a plurality of connecting  
pads on one surface;

an insulating film which is formed on of a single layer and  
5 covers said one surface of the semiconductor substrate, and  
having which includes: (i) a plurality of holes extending through  
the insulating film, each of the holes corresponding to one of  
the connecting pads, ~~an upper surface, and a recess having~~  
and (ii) at least one recess extending partially through the  
10 insulating film such that a bottom surface of the recess  
is depressed from the with respect to an upper surface of the  
insulating film in a direction of thickness of the insulating  
film; and

interconnections at least one interconnection formed on one  
15 of the upper surface of the insulating film or on and the bottom  
surface of the a corresponding said at least one recess, and each  
said at least one interconnection being connected to a  
corresponding one of the connecting pads through a corresponding  
one of the holes in the insulating film.

2. (Currently Amended) A device according to claim 1,  
wherein ~~each of the interconnections~~ each said interconnection is

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formed on the bottom surface of the corresponding recess in the insulating film.

3. (Currently Amended) A device according to claim 1, wherein each of ~~the recesses~~ said recess in the insulating film has a pair of side surfaces, and ~~spaces are defined~~ a space is provided between each said at least one interconnection and the side surfaces of the at least one recess.

4. (Currently Amended) A device according to claim 1, wherein ~~the interconnections have~~ the at least one interconnection comprises a connecting pad ~~portions~~ portion, and which

5        wherein the semiconductor device further comprises:

         a bump ~~electrodes~~ electrode formed on the connecting pad ~~portions~~ portion, and

         an encapsulating film formed ~~between~~ around the bump ~~electrodes~~ electrode and on the insulating film ~~including~~ and the

10        interconnections.

5. (Withdrawn - Currently Amended) A device according to claim 4, further comprising an upper insulating film formed between the insulating film and the encapsulating film, and said

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upper insulating film having ~~holes~~ a hole formed in ~~portions~~ a portion corresponding to the ~~each said bump electrodes~~ electrode.

6. (Withdrawn - Currently Amended) A device according to claim 5, wherein the insulating film and upper insulating film are made of materials containing ~~the~~ a same main component.

7. (Withdrawn - Currently Amended) A device according to claim 5, wherein the upper insulating film and ~~the~~ encapsulating film are made of different materials.

8. (Withdrawn - Currently Amended) A device according to claim 4, wherein each of ~~the said bump electrodes~~ electrode protrudes from an upper surface of the encapsulating film.

9. (Withdrawn - Currently Amended) A device according to claim 4, wherein each of ~~the said bump electrodes~~ has electrode comprises a lower bump electrode and an upper bump electrode formed ~~thereon~~ on the lower bump electrode.

10. (Withdrawn - Currently Amended) A device according to claim 9, wherein the lower bump electrode protrudes from ~~the~~ an upper surface of the encapsulating film.

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11. (Withdrawn - Currently Amended) A device according to claim 1, wherein the ~~interconnections have~~ at least one interconnection comprises a connecting pad portions portion formed on the corresponding one of the connecting pads to which  
5 the interconnection is connected, and which

wherein the semiconductor device further comprises:

at least one bump electrodes electrode formed on the connecting pad ~~portions~~ portion of the at least one interconnection, and

10 an encapsulating film formed between around the bump electrodes electrode and on the insulating film.

12. (Original) A device according to claim 1, wherein the insulating film is made of an organic resin.

13. (Currently Amended) A device according to claim 1, wherein the recess in the insulating film has a depth which is not less than a thickness of the interconnection.

14. (Original) A device according to claim 1, wherein the insulating film has a thickness of 10 to 30  $\mu\text{m}$ .

15. (Original) A device according to claim 1, wherein the recess has a depth of 5 to 15  $\mu\text{m}$ .

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16. (Currently Amended) A device according to claim 15, wherein a distance between a bottom surface of the insulating film has a thickness of and the bottom surface of the recess is not less than 1  $\mu\text{m}$  ~~from the bottom surface of the recess.~~

17. (Withdrawn - Currently Amended) A device according to claim 1, wherein the ~~interconnections are~~ at least one interconnection is formed on the upper surface of the insulating film.

18. (Withdrawn - Currently Amended) A device according to claim 17, wherein the recess in the insulating film has a width which is substantially the same as ~~intervals~~ an interval between the adjacent interconnections.

19. (Withdrawn - Currently Amended) A device according to claim 17, wherein the ~~interconnections have~~ at least one interconnection comprises a connecting pad portions portion, and which

5        wherein the semiconductor device further comprises:  
         at least one bump electrodes electrode formed on the connecting pad ~~portions portion,~~ and

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10 an encapsulating film formed ~~between~~ around the bump  
~~electrodes~~ electrode and on the insulating film ~~including~~ and the  
interconnections.

20. (Withdrawn - Currently Amended) A device according to  
claim 19, ~~which~~ further ~~comprises~~ comprising an upper insulating  
film formed between the insulating film and the encapsulating  
film, ~~and holes~~ said upper insulating film including a hole  
formed in ~~portions~~ a portion corresponding to the each said bump  
~~electrodes~~ electrode.

21. (Withdrawn - Currently Amended) A device according to  
claim 20, wherein the insulating film and upper insulating film  
are made of materials containing ~~the~~ a same main component.

22. (Withdrawn - Currently Amended) A device according to  
claim 20, wherein the upper insulating film and the encapsulating  
film are made of different materials.

Claims 23-35 (Canceled).

36. (New) A semiconductor device comprising:  
a semiconductor substrate having a plurality of connecting  
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an insulating film which covers said one surface of the  
5 semiconductor substrate, and which includes: (i) a plurality of  
holes extending through the insulating film, each of the  
holes corresponding to one of the connecting pads, and (ii) at  
least one recess extending partially through the insulating film  
such that a bottom surface of the recess is depressed with  
10 respect to an upper surface of the insulating film in a direction  
of thickness of the insulating film; and

at least one interconnection formed on one of the upper  
surface of the insulating film and the bottom surface of a  
corresponding said at least one recess, each said at least one  
15 interconnection being connected to a corresponding one of the  
connecting pads through a corresponding one of the holes in the  
insulating film;

wherein each said recess in the insulating film has a pair  
of side surfaces, and a space is provided between each said at  
20 least one interconnection and the side surfaces of the at least  
one recess.

37. (New) A semiconductor device comprising:

a semiconductor substrate having a plurality of connecting  
pads on one surface;

a protective film formed of a single layer, said protective  
5 film including: (i) a plurality of holes extending completely

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through the protective film, each of the holes corresponding to one of the connecting pads, and (ii) a plurality of recesses extending partially through the protective film such that the protective film has a plurality of recessed surfaces in the  
10 recesses which are lower than an upper surface of the protective film in a thickness direction of the protective film; and

interconnections which are respectively connected to the connecting pads through the holes in the protective film, and which are provided on one of the upper surface and the recessed  
15 surfaces of the protective film.